

What is claimed is:

1. A method for converting a fiber optical signal to an electrical signal inside of a generator comprising:
  - supplying at least one fiber optic transmitter at a location is internal to the generator;
  - connecting to said fiber optic transmitter at least one optic vibration sensor to provide a vibration magnitude signal internal to the generator;
  - converting said vibration magnitude signal to an electrical signal on an electrical wire; and
  - exporting said electrical signal from said generator via a hermetic seal;
  - wherein the environment internal to the generator is at a greater pressure than the environment outside of the generator.
2. The method of claim 1, wherein the environment internal to the generator is substantially hydrogen gas.
3. The method of claim 1, wherein converting said vibration magnitude signal to said electrical signal is performed at a detector.
4. The method of claim 3, wherein said detector preamplifiers said electrical signal.
5. The method of claim 1, combining said electrical wire with at least one additional electrical wire into a device, wherein said device has fewer electrical wire outputs than inputs and wherein signals on said electrical wire and said at least one additional electrical wire can be monitored via said electrical wire outputs.
6. The method of claim 5, wherein said device is a multiplexer
7. The method of claim 5, wherein said device is located internal to said generator

8. The method of claim 5, wherein said device is located external to said generator
9. The method of claim 1, further comprising preamplifying said electrical signal.
10. The method of claim 1, further comprising amplifying said electrical signal.
11. A method for monitoring vibration inside of a generator comprising:
  - forming a seal on the wall of said generator, wherein said seal delineates a generator side and an outside;
  - originating an fiber optic cable at said seal on the generator side;
  - transmitting an original optical signal on said fiber optic to a vibration sensor wherein said vibration sensor modifies said original optical signal to produce a modified optical signal;
  - receiving at a detector said modified optical signal wherein said detector is located on the generator side of said seal;
  - converting said modified optical signal to an electrical signal;
  - sending said converted electrical signal to a wire;
  - passing said wire from the generator side to the outside via a hermetic seal, wherein said hermetic seal is part of said seal; and
  - exporting said wire to a monitoring device.
12. The method of claim 11, wherein multiple seals are used on said generator, wherein the originating and receiving tasks are shared between said multiple seals.

13. A connector seal for converting an optical signal to an electrical signal comprising:

a seal delineating a boundary between a pressure environment and a regular environment;

at least one detector on said pressure environment side of said seal;

at least one fiber optic cable connected to said at least one detector wherein said at least one detector receives an optical signal from said at least one fiber optic and said detector converts said optical signal to an electrical signal;

at least one wire that originates on said pressure environment side of said seal that hermetically spans said boundary, wherein said at least one wire receives said electrical signal; and

a power wire originating on said regular environment side of said seal that hermetically spans said boundary and supplies power to at least one object.

14. The method of claim 13, wherein said at least one object is said detector

15. The method of claim 13, wherein said electrical signal is amplified

16. The method of claim 13, further comprising a reducer at least one wire to at least one fewer wire.

17. The method of claim 16, wherein said at least one object is said reducer

18. The method of claim 16, wherein said reducer is a multiplexer

19. The method of claim 13, wherein a control wire originating on said regular environment side of said seal that hermetically spans said boundary and controls at least device

20. The method of claim 13, wherein the number of said at least one wire is equal to or less than the number of said at least one fiber optic.